

(19)



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11)

EP 0 702 597 B1

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention
of the grant of the patent:
14.10.1998 Bulletin 1998/42

(51) Int. Cl.⁶: **B02C 7/12, D21D 1/30**

(86) International application number:
PCT/SE94/00394

(21) Application number: **94919027.6**

(87) International publication number:
WO 95/00245 (05.01.1995 Gazette 1995/02)

(22) Date of filing: **02.05.1994**

(54) REFINER SEGMENT

**SEGMENT EINER FEINMÜHLE
SEGMENT DE RAFFINEUR**

(84) Designated Contracting States:
AT DE ES FR IT SE

(72) Inventor: **VIRVING, Nils
S-165 73 Hässelby (SE)**

(30) Priority: **17.06.1993 SE 9302092**

(74) Representative: **Sundqvist, Hans
Sunds Defibrator Industries Aktiebolag
Patents Dept.
Strandbergsgatan 61
112 51 Stockholm (SE)**

(43) Date of publication of application:
27.03.1996 Bulletin 1996/13

(73) Proprietor:
**SUNDS DEFIBRATOR INDUSTRIES
AKTIEBOLAG
851 94 Sundsvall (SE)**

(56) References cited:
WO-A-88/06490

Note: Within nine months from the publication of the mention of the grant of the European patent, any person may give notice to the European Patent Office of opposition to the European patent granted. Notice of opposition shall be filed in a written reasoned statement. It shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

EP 0 702 597 B1

Description

This invention relates to a refiner segment for a disc refiner to disintegrate lignocellulose-containing fiber material.

The disc refiner comprises two opposed refining discs, one or both of which can be rotated. A plurality of refiner segments arranged on the discs are formed with a pattern of bars and intermediate grooves. The refining discs are so arranged that the refiner segments form a refining gap, through which the fiber material is passed whereby it is disintegrated by the bars on the segments.

The bars and grooves of the segments normally extend substantially radially, but can also be arranged more or less oblique in relation to the radius. The pattern can be divided into zones located outside each other and having different types of bars.

It was found advantageous, especially at disintegration of fiber material with high concentration, to place flow restrictions, so-called dams, across the grooves in the refiner segments in order to prevent untreated material from passing out through the refining gap. The dams force the material upward out of the grooves, so that it is subjected to treatment between the bars on the refiner segments on the opposite refining discs.

In plants where the fiber raw material contains great amounts of sand and other impurities, the bars on the refiner segments are worn out prematurely. This applies especially to plants for the manufacture of fiberboard.

When the refiner segments are provided with dams see e.g. WO-A-880 649 0, the wear concentrates on the bars about these dams. It was also found, that the dams are not worn to the same degree as the bars about them. The dams thereby will project up above the bars on the refiner segment, which implies that they get into contact with and wear down the bars on the refiner segments on the opposed refining disc. The refiner segments are thereby subjected to much stronger wear, which results in an unacceptably short service life of the refiner segments.

In order to overcome these problems, it has been necessary in certain cases to install expensive equipment, which removes the sand before the disc refiner to the greatest possible extent.

Alternatively, refiner segments without dams had to be used. In such cases some other steps have to be taken about the reduced quality of the finely-disintegrated material, for example refining in several steps.

The present invention offers a solution for the aforesaid problems, without giving rise to other drawbacks. According to the invention, the dams are so arranged in the grooves that their angle in relation to the radius of the refiner segment is smaller than 30°, preferably smaller than 15°.

Due to this arrangement of the dams, the wear will be more uniform, and the service life of the refiner segment increases.

The invention is described in greater detail in the

following, with reference to the accompanying Figure showing an embodiment of the invention.

The refiner segment 1 is formed with a pattern of bars 2 and grooves 3, which are arranged obliquely in relation to the radius of the refiner segment. In certain places in the grooves dams 4 are provided and arranged substantially radially.

The deviation of the dams from the radius should be less than 15°, but depending on the configuration of the pattern of the refiner segment also slightly greater deviations can be imagined.

Suitable dimensions of the pattern of the refiner segment can be a bar width of 1-4 mm, a groove width of 2-12 mm and a bar height of 4-15 mm. The dams should extend upward to the level of the bar tops.

The invention is not restricted to the embodiment shown and described, but can be varied within the scope of the invention as defined in the claims.

Claims

1. A refiner segment for disc refiners for disintegration of lignocellulose-containing material, formed with a pattern of bars (2) and intermediate grooves (3) where dams (4) are located in the grooves, characterized in that the dams (4) are so arranged that their angle in relation to the radius of the refiner segment (1) is smaller than 30°.
2. A refiner segment as defined in claim 1, characterized in that the direction of the dams (4) deviates from radial direction by less than 15°.

Patentansprüche

1. Refinersegment für Refinerscheiben zur Zerkleinerung von lignozellulose-enhaltenden Material ausgebildet mit einem Muster aus Stegen (2) und dazwischenliegenden Nuten (3) wobei Sperren (4) in den Nuten angeordnet sind, dadurch gekennzeichnet, daß die Sperren (4) so angeordnet sind, daß ihr Winkel im Verhältnis zu dem Radius des Refinersegments (1) weniger als 30° beträgt.
2. Refinersegment nach Anspruch 1 dadurch gekennzeichnet, daß die Ausrichtung der Sperren (4) von der radialen Ausrichtung um weniger als 15° abweicht.

Revendications

1. Segment de raffinage pour raffineur à disques en vue de la désintégration de matériau contenant de la lignocellulose, constitué d'un réseau de barres (2) et de rainures intermédiaires (3), des barrages (4) étant positionnés dans les rainures, caractérisé en ce que les barrages (4) sont disposés de

manière que leur angle par rapport au rayon du segment de raffinage (1) soit plus petit que 30°.

2. Segment de raffinage selon la revendication 1, caractérisé en ce que la direction des barrages (4) s'écarte de la direction radiale de moins de 15°.

10

15

20

25

30

35

40

45

50

55

3

